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SPECIAL REPORT

The Chemistry of Defeat:

Asymmetries in U.S. and Soviet Chemical Warfare Postures

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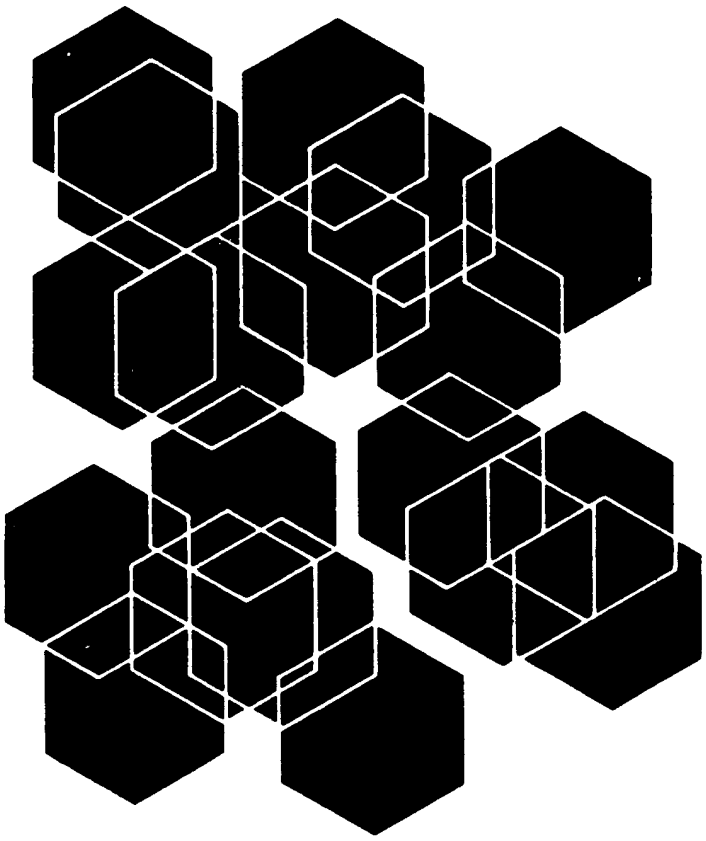

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Preface

Among the foci of the research and publications program of the Institute for Foreign Policy Analysis are the respective force levels of the United States and the Soviet Union as they affect U.S. security interests and alliance relationships. The Institute has published, and will continue to publish, a series of studies designed to identify and analyze such policy issues confronting the United States in the complex environment of the 1980s.

The present study is of special interest because, as the author indicates, the growing capability of the Soviet Union to conduct chemical warfare presents for American policymakers a number of formidable policy issues. Although the remedies themselves are fraught with immense political-psychological problems, especially in the present context of the transatlantic relationship, the issues addressed in this Special Report are of sufficient importance to deserve consideration both at the highest levels of government and at a broader public level. They must be addressed as part of the strategic-military-political framework within which the United States builds a defense capability in support of its security interests in the years just ahead. This Special Report is published as part of the contribution of the author, and of the Institute for Foreign Policy Analysis, to that discussion. The financial support of the Earhart Foundation to this study is gratefully acknowledged.

Robert L. Pfaltzgraff, Jr.
President
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Summary Overview

Recent reports of the use of chemical warfare in Southeast Asia and Afghanistan have brought to public attention the fact that the United States has largely ignored this aspect of warfare for almost a decade. The Soviet buildup of its strategic nuclear forces has received considerable attention; increases in the Soviet Navy, in military manpower, and in tactical forces have likewise not been ignored. But Soviet chemical warfare (CW) capabilities have only belatedly been recognized as significant, despite the fact that, today, among all of the comparisons of U.S./Soviet military capabilities, one of the most lopsided is that for employing chemical warfare and carrying out military operations in a chemical environment. The Soviet capability in this area is superior to that of the United States by two or three orders of magnitude—in munitions stockpiles, testing facilities, training activities, equipment, personnel, force structure, and understanding of the potential utility of this advantage.

The current posture of the United States with respect to chemical warfare is the result not of chance or even negligence, but of deliberate downgrading. Beginning in the late 1960s, the CW capability of the United States underwent a rapid and almost complete decline—a decline resulting, at least in part, from the American public's reaction to a test accident and considerable public opposition to the U.S. use of riot control agents and herbicides in Vietnam. Coincident with—and perhaps even partly because of—this decline in U.S. interest and capability, the Soviets have not only improved their posture for chemical warfare, as they have done for all combat arms of the military establishment, but they have also upgraded the status of CW capabilities throughout Warsaw Pact ground, air and naval forces. Chemical warfare today is clearly a major contingency for which the Soviet Union is preparing its forces.

Soviet Chemical Warfare Capabilities

The Soviet Chemical Troops, commanded since 1970 by Lieutenant-General V. K. Pikalov, comprise some 70,000 to 100,000 full-time chemical warfare officers and men and are a separate combat arm of the military establishment. The CW troops consist of units and subunits responsible for chemical defense, radiation and chemical reconnaissance, operation of flame throwers and smoke generators, identification of enemy CW sites and other targets for Soviet chemical strikes, and decontamination and deactivation of personnel, weapons, equipment, struc-

tures and terrain exposed to radioactive and chemical agents. Chemical units are organic to every Soviet command—not only ground forces, but also missile forces, naval forces, air forces, etc.—from front to regiment; chemical battalions are standard at division level for all Soviet divisions, and chemical companies are assigned to all line regiments. Smaller units, even down to company size, have special Chemical Troops.

Chemical warfare preparedness is built into the Soviet main fighting equipment, which is thus capable of supporting operations in and across contaminated zones. All modern tanks and armored personnel carriers are designed to offer protection in both nuclear and chemical contaminated areas through integral seals and air filters. The remainder of the new Soviet generation of fighting vehicles, including support vehicles, missile transporters, and command vehicles, are provided with individual protective equipment for the crews.

There is also a considerable amount of equipment issued for detection, protection and decontamination. Chemical troops have their own sophisticated type of chemical detection kit and automatic alarm system for the detection, in particular, of nerve agents. Regular soldiers are equipped with simpler kits for the detection and identification of chemical agents. Further, all soldiers have personal masks and protective clothing. The standard mask protects the head, eyes and respiratory tract; the clothing includes capes, overalls, protective suits, hoods, leggings, gloves and boots. Individual medical kits are issued to each soldier and contain Soviet nerve agent antidotes and medical treatments against lung irritants. Despite the fact that the antidotes have side effects, they are apparently considered by the Soviets to be a standard first aid measure.

Each Soviet division has dedicated decontamination companies which are to decontaminate both personnel and equipment and return them to combat. The specialized decontamination equipment is varied and plentiful, and includes small personal decontamination kits supplied to individuals and stocked in vehicles, decontamination kits for personal weapons, special decontamination kits for larger weapons and clothing, and special kits for vehicle decontamination. Additionally, several types of truck-mounted decontamination systems have been in service for some time.

In addition to equipment preparedness, it appears to be standard Soviet practice to train troops in the use of protective and decontamination equipment for the purpose of preparing them to continue to fight during a chemical attack for a considerable period of time; such training is

emphasized in *all* individual and unit level training. As an indication of their seriousness, training in live agent environments is occasionally practiced, and something like a dozen or so persons are killed each year in these exercises.

Available details regarding the Soviet Union's offensive CW capability are scarce. Soviet chemical warfare agents are believed to include both World War I agents—mustard gases, phosgene, and hydrogen cyanide—and more modern ones—soman, other nerve gases, and an agent called VR-55, which is believed to be soman thickened with a synthetic polymer. While there is no conclusive evidence on how much agent is stockpiled, estimates in the public press range up to over 700,000 tons. The Soviets appear to have filled a wide range of munitions with chemical agents, including bombs, bomblet dispensers, aircraft spray tanks, artillery shells, mortar bombs, chemical land mines, short-range rockets, and longer-range surface-to-surface missiles. The quantity of Soviet chemical munitions is variously estimated from as low as 10 to 15 percent of their total munitions stockpile to as high as 50 percent.

U.S. Unpreparedness for Chemical Warfare

The degree of Soviet attention to chemical warfare, particularly in the extent of the design and equipment of their forces, was not clear to the U.S. defense community, despite some available intelligence information, until analysis of Soviet actions during the 1973 Middle East war and examination of Warsaw Pact equipment provided to Egypt during that war alerted many to the situation. As a result of those revelations, attention paid to the Soviet chemical warfare threat began to increase: It gradually became clear that the Soviets could reap great advantages from this capability and that the relative U.S. unpreparedness held dire implications for deterrence and war conduct. U.S. force postures to cope with the chemical warfare threat were evaluated by the Air Force in 1974, by the Army in 1975, and by the Navy in 1977. These analyses showed that the U.S. posture was grossly inadequate. Not only did the U.S. military not have a protective posture capable of providing for force survival—to say nothing about providing for continued operations during a war which included chemical use—but the deterrent threat of retaliation in kind had deteriorated to a dangerously low level.

While the asymmetries and their implications began to be recognized at some of the highest levels within the U.S. military services, and while some actions have been initiated in the ensuing years to improve U.S.

protective preparedness, the overall effort still lags. Actions underway to reduce the present deficiencies do not yet appear to match the seriousness of the threat. The two key issues are: (1) focusing sufficient effort on improving protection so that forces can survive and continue fighting, and (2) providing a force posture sufficient to enhance chemical warfare deterrence.

On the first issue, decisions regarding both the direction and magnitude of U.S. programs aimed at developing an adequate CW defensive posture remain to be made, and a considerable number of the marginally effective activities now underway need to be pushed more vigorously. Current programs will not provide adequate protection for many years, if ever, without an intensive effort and unequivocal, high-level support. The issue is partly budgetary: What priorities in allocating all kinds of resources—financial, technical, human—should be assigned to the solution of the chemical warfare defense problem as compared with the solution of other problems? However, improving the current capability does not require huge outlays of funds. Nor can the essential improvements be accomplished merely by the infusion of funds to buy more masks and protective garments, as much as these are needed. What is required, in addition, is a major change in the defense community's attitude toward chemical warfare; a full understanding of how to conduct operations in a toxic environment; incorporation of this understanding into the planning for new weapons systems; dedication of sufficient research and development resources to improve protective equipment as expeditiously as possible; and constant training, with whatever equipment is available over time, in carrying out missions under simulated toxic environmental conditions.

Equipment and training can go a long way toward overcoming some of the U.S. deficiencies. Research and development can provide solutions to many of the equipment and technical problems, if sufficient resources are committed. In order to advance the chemical defense programs in a more coherent manner, however, considerable integration and coordination are required. Unfortunately, there are still only a few focal points at significant levels in the Services for force development, training, coordination, direction, or plans, and very few in the Office of the Secretary of Defense. Responsibilities for chemical warfare generally are fragmented, left up to individuals at different levels to deal with as they see fit; or, at best, they are assigned as secondary duties.

While protection of U.S. forces is theoretically feasible, if enough attention and resources are committed, this is not the full solution to the CW

blem. The protective measures that need to be undertaken are ex-ely cumbersome and inconvenient. Consequently, the basic objec- of deterring the use of chemical warfare and of conducting suc-ul combat operations, if deterrence fails, can be achieved only if United States develops and procures a balanced protective *and* liation-in-kind capability.

ce a user's protective requirements, in the absence of the threat of liation in kind, are considerably smaller than a defender's (the user ould know when and where he would have to be prepared, and the efender would have to be encumbered throughout), it is virtually certain at an impressive protective posture alone will not dissuade an enemy om using chemical weapons if he sees an advantage in doing so. And he Soviets can surely recognize many advantages in their use of chem-cal weapons in a major conflict with the West. For example, in the event of such a conflict in Europe, whether conventional or nuclear, attacking the major targets—NATO anti-tank defenses; NATO nuclear capabilities, including command and control; NATO reserves; and NATO tactical air—with chemical weapons would provide important advantages for the Soviets that would complement rather than duplicate the effects of conventional or nuclear weapons. In order to negate the Soviet Union's potential advantages in using chemical weapons, the West must not only be prepared to survive such attacks, but it must be able to force the Soviets into the same disadvantageous position with regard to protective measures that the West faces—indeed, such a posture may be even more disadvantageous for the Soviets, since their protective gear is more burdensome than that of the West. Thus, the United States needs chemical weapons as well as a good protective posture to make initiation of chemical warfare unattractive to the Soviets by denying to them the tactical advantages of fighting unencumbered against a "buttoned-up" force.

It is unlikely that conventional counteraction alone could deter Soviet use of chemicals or redress the balance on the battlefield if deterrence failed. Given the casualties, force degradation, and logistic constraints which would apply on the Western side with Soviet use of chemical weapons in a major war, it is hard to see how Soviet exploitation of the drastically changed tactical balance could be prevented by conventional countermeasures.

Nor do nuclear weapons by themselves seem up to the task. A current and future threat of nuclear response to a conventional-plus-chemical attack lacks credibility, given the nuclear postures of the two sides. Further, it lacks wisdom. In terms of risks perceived by the Soviets, the

threat of tactical nuclear forces is already there. If they choose to begin a war, they will already have considered the likely military and political costs, including a nuclear response. And, if they are willing to risk the possibility of nuclear retaliation merely by attacking, a one-sided use of chemical weapons could be seen as essentially a no-additional-risk means of acquiring significant military advantage.

Arms Control and CW Capabilities

The maintenance of a chemical retaliation-in-kind capability has been for many years the U.S. policy, for the reasons just recounted. However, the reality of this U.S. capability has steadily declined over the last decade to the point where it is no longer credible and will soon be next to zero. The opportunity now exists to reverse the decline. If Administration support is forthcoming, the U.S. chemical weapons stockpile modernization can begin in the next few years.

The long-pursued objective of a complete and verifiable ban on chemical weapons does not negate the importance of proceeding along such a path. Allowing a potential treaty which is currently stalemated—and about which there is fundamental disagreement between the negotiating parties as to terms and, in particular, verification provisions—to determine the American military posture makes a travesty not only of U.S. security but also of the arms control negotiation process. Negotiations are detrimental to U.S. interests if the Soviets can halt U.S. efforts to redress Soviet advantages merely by showing up at the negotiating table, while being under no obligation to halt their own programs.

It is important not to confuse a national policy of no-first-use and a national goal of effective, successful disarmament negotiations with the need for a capability to threaten a response in kind as long as that remains a necessary component of deterrence. The policy of pursuing arms control while holding back on programs to fulfill genuine security requirements has been a futile and dangerous course. The U.S. approach of self-denial has been based on good intentions and high expectations, and it may have been worth the try. But it clearly has not produced the desired results to date, and there is no rational basis for believing that it will work in the future.

The best answer from both the arms control and the military points of view is for the United States to improve not only its protection against chemical weapons but also its stockpile of chemical weapons. Such action is needed to reduce the risk that a war, if it comes, would include the use

of chemical weapons; to enable the West to defend itself against chemical weapons, if the Soviets initiate their use; and, possibly, even to influence the Soviet Union to cooperate more fully in developing verification arrangements for an effective treaty. Deterrence cannot be a bluff; it must be credible if we are to deter or defend successfully. A credible threat of retaliation in kind must be re-established and maintained until an acceptable international agreement is reached, whether it is forthcoming in the near future, the longer term, or not at all.

The Chemistry of Defeat **$6.50**

The major effort mounted by the Soviet Union in the last decade to develop and deploy chemical weapons has produced a formidable Soviet capability that has placed NATO defense forces at a serious disadvantage. This asymmetry is especially dangerous because, historically, chemical weapons have been used only when such a serious imbalance has existed, and, conversely, their use has been deterred when a balance was perceived. The current asymmetry stems not only from Soviet emphasis on preparing for chemical warfare, but also from a deep-seated reluctance in U.S. political and military circles to come to grips with the reality and implications of this threat. Initiatives so far undertaken by the United States and other NATO countries to correct this imbalance have been insufficient, but, even more important, have addressed only half of the solution--protection for U.S./NATO forces. Equally important is the need to improve the U.S. capability to deter chemical warfare through the threat of retaliation-in-kind--a capability that is almost non-existent today. This study summarizes essential data about chemical warfare and weapons, assesses the state of Soviet CW capabilities, both offensive and defensive, examines Soviet doctrine and preparations for the use of chemical weapons in both nuclear and nonnuclear conflicts, and explores the basic choices open to the United States in responding to the Soviet threat.

Amoretta M. Hoeber was recently appointed Principal Deputy Assistant Secretary of the Army for Research, Development and Acquisition. At the time she prepared this study, she was Senior Analyst in the Policy and Strategy Analysis Division of the System Planning Corporation, prior to that, she had been director, Department of Military Policy Analysis, at the General Research Corporation. She has also been a member of the research staffs of the Rand Corporation, Analytic Services, Inc., and the Stanford Research Institute. She is also the current President of the Military Operations Research Society, a member of the Joint Strategic Target Planning Staff Scientific Advisory Group, and a non-active member of the Board of Directors of the Committee on the Present Danger. She is co-author of *Soviet Strategy for Nuclear War* (1979) and *Conventional War and Escalation* (1981), as well as author of numerous articles on military and arms control issues.

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